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IS 7853 (1975): Surveyor, Cast, Dental [MHD 8: Dentistry]

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“Knowledge is such a treasure which cannot be stolen”





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*Indian Standard*  
SPECIFICATION FOR  
SURVEYOR, CAST, DENTAL

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# Indian Standard

## SPECIFICATION FOR SURVEYOR; CAST, DENTAL

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# *Indian Standard*

## SPECIFICATION FOR SURVEYOR, CAST, DENTAL

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 20 October 1975, after the draft finalized by the Dental Equipment Sectional Committee had been approved by the Consumer Products and Medical Instruments Division Council.

**0.2** This standard is one of the series of Indian Standards on dental equipment and instruments and has been formulated at the instance of the Advisory Committee for Development of Surgical Instruments, Equipment and Appliances, Government of India.

**0.3** Surveyor, cast, dental, is used extensively by the dental profession. This standard covers functional requirements and is expected to help in providing equipment of uniform quality consistent with ease of operation.

**0.4** In the preparation of this standard, assistance has been derived from GG-S-00805 a( DSA-DM ) ' Interim Federal Specification: Surveyor dental clasp', issued by Defence Personnel Support Centre, USA.

**0.5** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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### 1. SCOPE

**1.1** This standard covers the dimensional and other requirements for cast surveyor for use in designing dental prostheses.

\*Rules for rounding off numerical values ( noised ).

## 2. MATERIALS

2.1 The dental cast surveyor's components shall be **fabricated** of the materials given below. Material not specifically designated shall be entirely **suitable** for the purpose intended:-

<i>Surveyor Components</i>	<i>Material</i>
Base; tilt-top table ( top, mount, clamp ); upright column; surveying arm; locking screw knob	Aluminium alloy conforming to Designation 4600 of IS : 617-1975*
Locking screw for upright column collar, washer; locking screw and cap for surveying spindle; 2" and 6° taper tools; undercut gauge (large diameter )	Nickel-plated brass
Surveying spindle	Stainless steel conforming to Designation 20Cr 13 or 30Cr13 of IS : 1570 (Part V)-1972†
Undercut gauge (small diameter ); upright column stud, washer, nut	Steel
Surveying rod and cylindrical blocking-out tools; coil spring	Nickel-plated steel
Surveying arm self-aligning ball bearings	Tempered steel
<b>Spindle collet and three-jawed chuck</b>	Heat-treated steel
Tilt-top table clamp transfer screw	Cadmium-plated steel
Liners for spindle ball bearing bushing; tilt-top table locking screw; tilt-top table ball bearing bushing	Brass
Spindle scribing rods .	Carbon
Shoes	Rubber
Accessory tool and carbon rod containers	Plastics
Metal protective sheath	Steel

\*Specification for aluminium and aluminium alloy ingots and castings for general engineering purposes ( second revision ).

†Schedules for wrought steels: Part V Stainless and heat-resisting steels ( first revision ).

### **3. SHAPE AND DIMENSIONS**

**3.1** The essential dimensions of cast **surveyor** shall **conform** to **Fig. 1** to 3.

### **4. CONSTRUCTION**

**4.1** The surveying spindle shall be machined and centreless ground to produce a straight, concentric rod. The surveying spindle shall be mounted in **self-aligning** ball bearing bushings which shall be factory **centred** in the cylindrical housing of the surveying arm. The **lower end** of the spindle shall be drilled internally and threaded externally to receive the threaded collet. The collet shall activate the three-jawed chuck used to hold the various interchangeable working tools. The upper end of the upright column and the lower end of the cylinder housing of the surveying arm shall be machined to matching taper bearing surfaces.

**4.2** The surveying spindle shall be perpendicular to the top surface of the surveyor base and shall have a **runout** not exceeding 0-1270 mm when tested as specified in 6.

### **5. WORKMANSHIP AND FINISH**

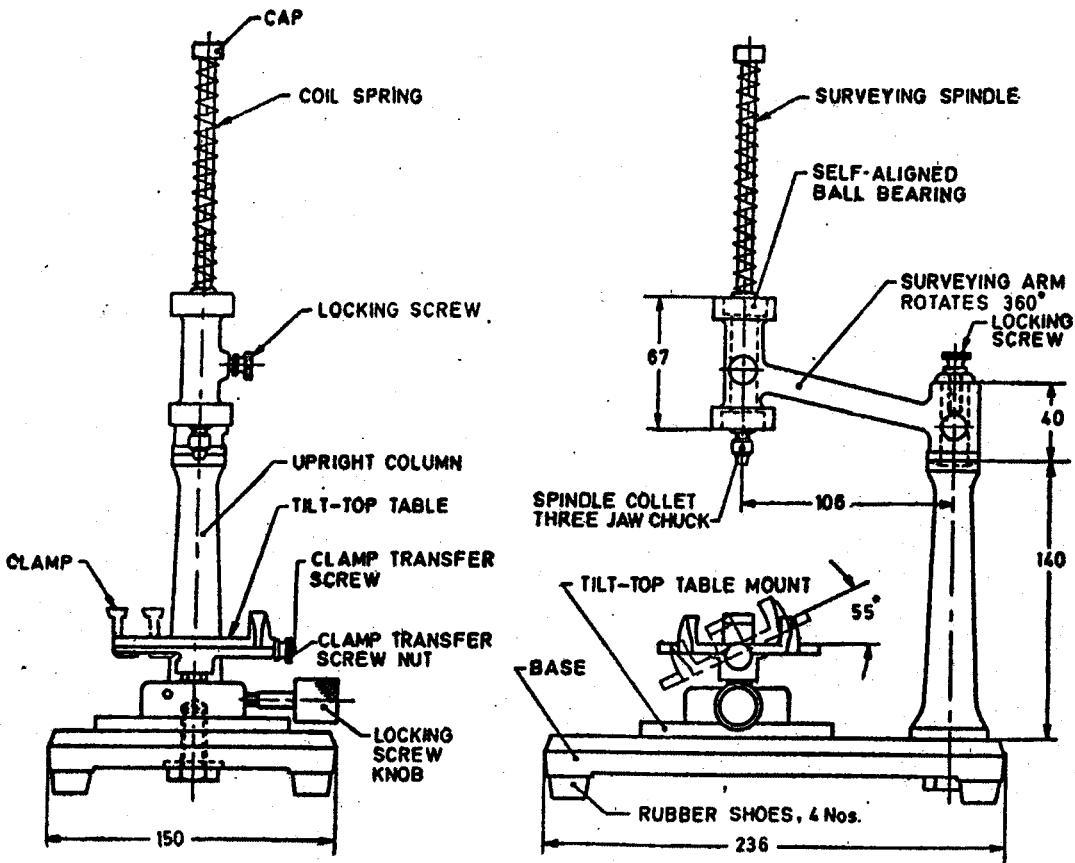
**5.1** The cast surveyor shall be free from **imperfections** which affect its appearance or which may impair its serviceability. All surfaces, except for plated hardware components and those listed in 2, shall have a black wrinkle, baked enamel finish. The top surface of the surveyor base shall be machined, ground, lapped and sand-blasted. The bottom and outer rim surface of the tilt-top table mount shall be machined and polished to provide easy movement over the top surface of the surveyor base. The top surface of the tilt-top table shall be slightly roughened and shall be scribed with a series of circles of uniformly increasing diameters. The matching taper, bearing surfaces of the surveying arm and upright column shall have a machined finish.

### **6. TESTS**

**6.1 Runout Test** — The total indicated **runout** of the surveying spindle shall be measured to the nearest 0·0254 mm. The spindle shall be **held** in its housing and rotated **slowly**. A dial indicator sensitive to 0·0127 mm, equipped with a knife-edge foot or other suitable equipment of **equal** accuracy shall be employed. If a dial indicator is used, it shall be mounted with a shaft perpendicular to the axis of the spindle and shall be positioned so that the foot contacts the spindle surface. The **difference** between the maximum and minimum readings for one full rotation of the spindle shall be taken as the total indicated **runout**.

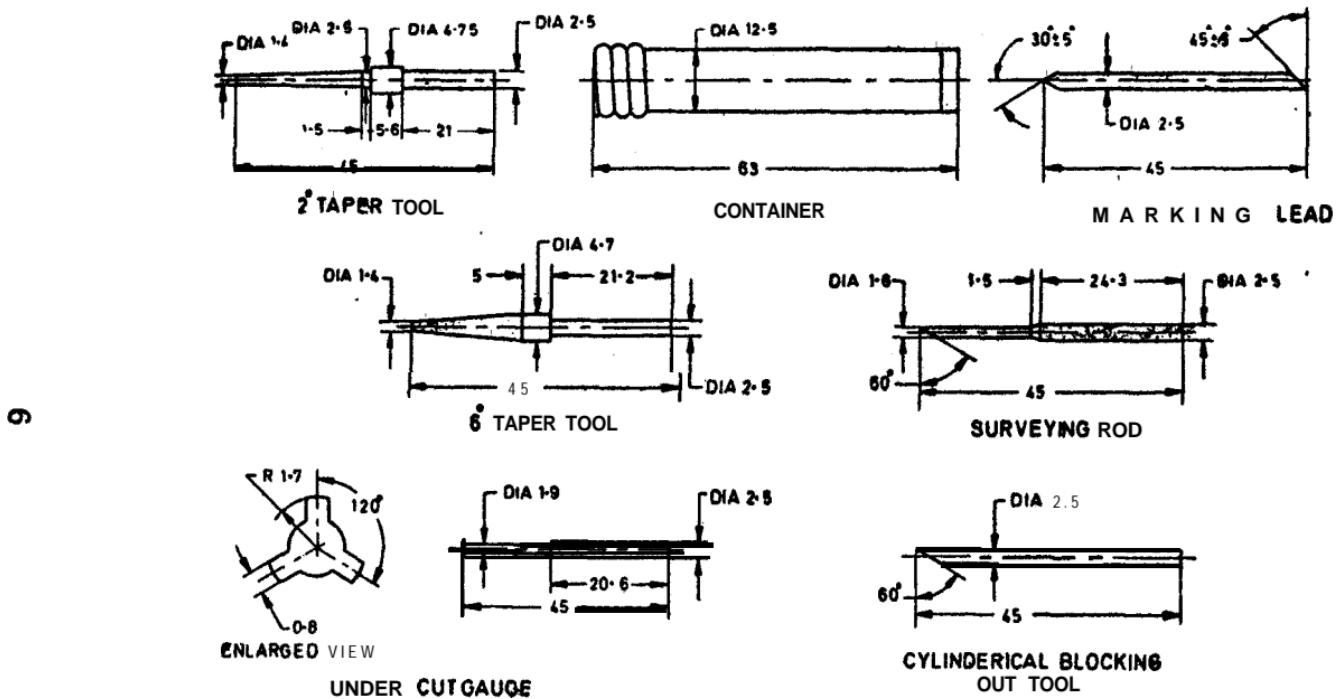
### **7. MARKING**

**7.1** Each-cast surveyor shall be permanently and legibly marked with the manufacturer's name, initials or registered trade-mark.



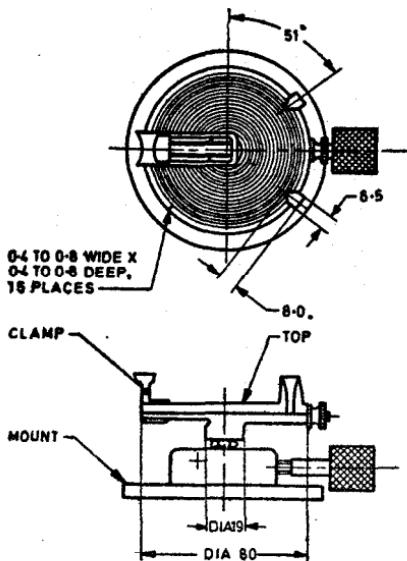
All dimensions in millimetres.

FIG. 1 SURVEYOR, CAST, DENTAL



All dimensions in millimetres.

**FIG. 2 DETAILS OF CONTAINER, MARKING LEAD AND TOOLS**



All dimensions in millimetres.

**FIG. 3 TILT-TOP TABLE MOUNT**

### **7.1.1 The cast surveyor may also be marked with the ISI Certification Mark.**

**NOTE** — The use of the **ISI** Certification Mark is governed by **the** provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The **ISI** Mark or products covered by an Indian Standard conveys the assurance that they have been produced to comply with **the** requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by **ISI** and operated by the producer. **ISI** marked products are also continuously checked by **ISI** for conformity to that standard as a further safeguard. Details of **conditions** under which a licence for the use of the **ISI** Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

## **8. INSTRUCTIONS FOR USE AND MAINTENANCE**

### **8.1 The cast surveyor shall be accompanied by instructions manual giving adequate information regarding operation and maintenance.**

## **9. PACKING**

### **9.1 The cast surveyor shall be packed as agreed to between the purchaser and the supplier.**

# INTERNATIONAL SYSTEM OF UNITS ( SI UNITS )

## Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

## Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

## Derived Units

Quantity	Unit	Symbol	Conversion
Force	newton	N	1 N = 0.101 972 kgf
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m <sup>2</sup>
Frequency	hertz	Hz	1 Hz = 1 c/s ( s <sup>-1</sup> )
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m <sup>2</sup>

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